

# SEQUENCE LISTING

<110> Randy M. Berka  
Michael W. Rey  
Wendy T. Yoder

<120> Methods For Producing Polypeptides In  
Cyclohexadepsipeptide-Deficient Cells

<130> 5778.200-US

<140> To Be Assigned

<141> 2000-01-13

<150> 09/229,862

<151> 1999-01-13

<160> 4

<170> FastSEQ for Windows Version 3.0

<210> 1

<211> 11212

<212> DNA

<213> Fusarium

<400> 1

aattagattc	cactagtacg	ccattgtaga	atcaaggcca	agatatgaac	aacccataag	60
taacggcgat	cctgtctcat	gtatccaaaa	ataagagaca	cggcataattc	actgctttgc	120
agatctttct	tcaaattctct	ccctcgagaa	gctactggga	tgaatgagtc	tcttggtca	180
gattagatat	attcactgta	tctgccgaat	agactttgcc	tggtagcatt	aacgttccta	240
tattctatta	tcaaattcctt	acattcaata	tggaaatatct	tactgctgtc	gatggtaggc	300
aagacctgcc	acctacacca	gcttcgtttt	gtagtcattgg	agatagtccc	ctcaatagct	360
cttacgagca	actcttccat	ctctatggtc	tggattcgag	tcgcacgcga	gctatcaaac	420
catgcacacc	tttccagctt	gacatgatcg	actgcaatgc	tttggataag	cagtctgcta	480
tcggccatgc	ggtgatgat	gtcccaaccg	acattgacat	ctctcgtttc	gcgcttgctg	540
ggaaggagat	cgtcaaccaa	accccagcct	tgcgagcctt	tgccctcacc	tcggactctg	600
gaaagacttc	tcaagtcac	ctaaaagata	gctttgtctt	ctcatggatg	tgctgggtctt	660
cttcgagctc	cccagatgaa	gtgggttcggg	atgaagctgc	cgctgctgca	tccggggccac	720
gctgcaaccg	cttcgttcta	cttgaagaca	tgcagacgaa	gaaatgtcag	ctgggtttgga	780
ccttcagtca	tgcattggta	gacgtcactt	tccaacaacg	cgctcctgagc	cgtgttttcg	840
cggtttacaa	gcatgagaag	gacacacatc	ggcctgagac	acccgagtca	tctgatgcca	900
ctgacactga	ctctcagtca	gtctccgtgg	tgtccatgag	ctgcgaggac	aatgccgtat	960
cggcgactca	tttctggcaa	actcacctta	acgatctcaa	tgcgtccgtc	ttccctcacc	1020
tgtctgacca	cctgatgggtg	cccaacccaa	ctacaacagc	agagcatcgt	atcacattcc	1080
ctcttttcaca	gaaagcacta	tccaattctg	ccatctgccg	tactgcactc	tcaatactcc	1140
tctcgcgcta	cactcactct	gacgaggcct	tgtttggtgc	ggtaactgag	caatctctac	1200
catttgacaa	acactatctt	gcagatggta	cgtaccaaac	agttgcaccc	cttcgtgtac	1260
actgccaatc	aaatcttctg	gcatcagatg	tcatggatgc	aatctcttct	tacgatgatc	1320
gccttggtca	tctcgcccca	tttggccttc	gcgacatccg	caacactggg	gataatggct	1380
ctgcgcctg	cgatttccaa	actgttttac	tgcgcaccga	tggcagccac	gtaaacaatg	1440
gtatcaacgg	tttcttccaa	cagataacag	agtcaagcca	tttcatgcct	tgcaacaacc	1500
gtgccctcct	tctgcactgt	cagatggaaa	gtagcggagc	tctgctgggt	gcctactatg	1560
accacaatgt	tatcgattcg	cttcagacaa	cgcgtctgct	acagcagttt	ggatcatctga	1620
tcaagtgttt	gcaaagtcc	ctagacctga	gctctatggc	tgaggtcaac	ttgatgactg	1680
agtatgacag	agcagagatt	gagagttgga	actcgcaacc	gttagaggta	caggataccc	1740

tgtaccacca	tgagatgttg	aaagctgttt	ctcattcccc	caccaaaccg	gccatccaag	1800
cgtgggatgg	agactggacc	tattccgagc	tcgacaatgt	ttcgtcaaga	ctcgtgtcc	1860
atatcaagtc	acttggcctt	agagctcagc	aagccattat	tccagtcctac	tttgagaagt	1920
cgaaatgggt	cattgcttca	atgctggctg	ttctcaagtc	tggtaatgct	ttcactctaa	1980
ttgatcccaa	tgatccacca	gctcgaactg	cccaggctgt	cacgcagact	cgggcgactg	2040
tagcgcttac	ttccaagcta	caccgcgaga	ctgtacagaa	gcttgtaggc	cgttgcgttg	2100
tggttgatga	cgagctttctg	caatcagttt	ctgccagcga	cgattttctca	agtctgacca	2160
aatcgcaaga	cttggcctac	gtgatcttca	cttctggtag	cacgggcgac	ccgaaaggca	2220
tcatattga	acaccgagcg	ttctcatcat	gtgcactcaa	gttcggcgcg	ttctctggca	2280
tcagctctga	tactcgtgcc	ctacaatttg	gaacccatgc	ctttggcgca	tgtcttctcg	2340
agattatgac	tactctcatc	aacggtggct	gcgtttgtat	tccctccgac	gatgatcgta	2400
tgaacagtat	cccgtccttc	atcaaccgat	acaacgttaa	ttggatgatg	gcgacacctt	2460
cgtacatggg	aaccttttca	cctgaagacg	ttcctggcct	tgcgacattg	gtacttgttg	2520
gggagcagat	gtcatcttca	gtcaacgcaa	tctgggcccc	caagctccaa	ctcttgaacg	2580
ggtacggaca	gagtgaagt	tcttcaattt	gttttgcttc	caatatgtca	actgagccca	2640
acaacatggg	cagagcagtc	ggagctcatt	catgggtcat	tgacccgaac	gatataaacc	2700
gactagtttc	gattggagct	gtgggagAAC	tggtcattga	gagtcaggc	attgcccgcg	2760
actacattgt	tccccccct	ccggagaagt	ccccattctt	cacagacatt	ccaagctggt	2820
atccagcgaa	caggttttct	gatggggcaa	aactctacag	gacaggagat	cttgcaagat	2880
atgcctccga	tgggtccatc	gtttgccttg	ggcgcataga	ctcgcaggtc	aagatccggg	2940
gacagcgtgt	tgagctgggt	gccattgaga	cccatctccg	acagcagatg	ccagacgact	3000
tgactattgt	ggtagaagct	accaagcgat	cccaatctgc	caacagcaca	tccttaattg	3060
catttctaata	agggttcttct	tacttcggaa	atagaccctc	ggatgccac	attctggacc	3120
atgatgctac	caaagctatc	aacataaagc	tggagcaggt	attgcctcga	cactctatcc	3180
cctcattcta	catctgcattg	ctggagcttc	cacgtactgc	caccgggaag	atagatagga	3240
ggcgactacg	aatcatgggc	aaagacatct	tggacaagca	gacccaaggg	gccattgttc	3300
aacaagcacc	cgctcctatc	cctgttttcg	cagacacagc	agcaaagctc	cacagtatct	3360
gggtacagag	tttgggtatc	gatccagcca	cggtcaatgt	tggggcaact	ttcttcgaac	3420
tcggaggaaa	ctctatcact	gctatcaaga	tgggtaacat	ggcgaggctc	gttggtatgg	3480
acctcaaggt	ctctaacatc	taccagcacc	cgacgcttgc	gggaatttcc	gcggtcgtca	3540
aggggtgatcc	tctgtcctac	actctcatcc	ccaagtcaac	tcatgaggga	cctgttgagc	3600
agtcttattc	acaaggccga	ctatggttcc	tggatcagtt	ggacgttggc	agtctgtggt	3660
atctgattcc	atatgctgtg	agaatgcgcg	ggcctgtcaa	tgtcgacgcg	ttacgtcggg	3720
ctcttgccagc	gcttgaacag	cgacacgaga	ctcttagaac	gacatttgaa	gaccaggatg	3780
gtgtcgggtg	acaaattgtt	cacgagaagc	tttctgagga	gatgaaggtc	attgatctct	3840
gtggttcaga	ccttgaccgc	tttgagggtg	tgaaccaaga	acagactact	cccttcaatc	3900
tctcatctga	agctggctgc	agagcgagc	tcttacgact	tggtgaagt	gaccacatcc	3960
tcactattgt	catgcattcag	atcatctcag	attggttggtc	aatgtatgtc	ttgcgacgcg	4020
atctcaatca	gctctactca	gctgcgctca	aggactcaaa	agaccgcgtg	tcagcactca	4080
ctcctctacc	tatccagtac	agcgactttg	caaaatggca	gaaggacca	ttcatagagc	4140
aggagaagca	actcaactac	tggagaagc	aactcaaaga	ctcttcccca	gcaaagatcc	4200
cgaccgactt	tgcgcgcctt	gcacttctgt	ctggagacgc	aggttgcgta	catgttacca	4260
tcgacggcga	gctctaccag	tcccttcgag	ccttctgcaa	cgaacacaac	acgacctctt	4320
tcgtcggttct	tctagctgcg	ttccgtgcgc	ctcattatcg	tctcacagct	gttgaagacg	4380
ctgtcattgg	tacaccaatt	gcgaatcgca	accgacctga	actggaggat	atcatcggtc	4440
gctttgtcaa	tacgcagtgt	atgcgaatca	acatagatca	tcacgatacc	tttgggactt	4500
tgatcaacca	agtcaaggct	acgacgcagc	cagcattcga	gaacgaggat	attccgtttg	4560
agcgcgttgt	atcagcacta	cagcctggat	ccagagatct	gtcaagcaca	cctctcgcac	4620
aactcatttt	tgcagtgcac	tcacagaagg	accttggaa	attcaagttc	cagggctctcg	4680
agtccgtacc	tgtgcctagc	aaagcgtaca	ctcgatttga	catggagttc	catctgtttc	4740
aagaaaccga	cagccttaaa	ggtagcgtca	actttgccga	tgagctgttc	aaaatggaga	4800
ctggtgaaaa	tgtcgtcaga	gtattctttg	agattctgag	aaacgggctt	caaagtctgc	4860
ggacaccagt	ctcaataactt	cctttgactg	atggcattgt	gactcttgaa	aaattggatg	4920
ttctcaacgt	caaacatgtc	gactatcccc	gagaatcgag	cttggtgat	gtcttccaga	4980
cccaagtctc	tgttataccc	gatagtctgg	ctgtggtgga	ctcctcgtgc	cgattgacct	5040
acaccagagt	ggatcgccac	tctgatatcc	tcgctggatg	gcttcgtcga	cggtcaatgc	5100
ctgcagagac	gcttgcgcga	gtatttgccc	cacggtcatg	tgagacaatt	gtcgcgttct	5160
ttggtgtggt</						

gagttcaggga	tatactttct	ggactttctg	ggcctaccat	tgttttgatt	ggccatgata	5280
cagcgctcc	cgatatcgag	gttactaacg	tcgagtttgt	tcgtatccgg	gatgcgctga	5340
atgacagcaa	tgcagatggc	tttgaagtca	tcgagcacga	cagcacaag	ccctcagcca	5400
cgagtctcgc	atacgtgctg	tatacctcag	gatccactgg	ccgaccaaaa	ggcgtcatga	5460
ttgagcaccg	tgtcattatt	cgaacagtca	caagtggctg	tatacccaac	tatccttcgg	5520
aaacgaggat	ggctcacatg	gcgaccattg	cgtttgacgg	cgcacgtac	gagatctaca	5580
gcgccctttt	gttcggaag	acacttgttt	gcgttgacta	catgacaacc	ctcgacgcta	5640
gagcactcaa	ggatgtgttt	ttccgagagc	atgtcaacgc	ggcaagtcat	gtcaccagct	5700
cttctcaaga	tgtacctctc	cgagtcocga	gaaggctctc	gagaaccttg	atgttcttct	5760
tcttggtggt	gacagattcg	acggccccag	atgctctcga	tgcgcaggga	ctttatcaag	5820
gggtccagtg	ttacaatggg	tacggcccaa	cagagaatgg	agtcatgagt	acaatctatc	5880
ccattgactc	gactgagtcg	ttcatcaatg	gagtcccaat	tggacgagct	ctgaacaact	5940
caggagcgta	tgtcgtggat	cctgagcaac	agcttggttg	cattgggtgtg	atgggagagc	6000
ttgttgtcac	tggcgatggg	cttgccgcgg	gctacagtga	caaagccctt	gacgagaacc	6060
gttttggtgca	cattactgtc	aatgaccaga	cagtgaaggc	gtatcgcact	ggcgatcgag	6120
tgcggtacag	gattggagat	ggcctcatcg	agttcttcgg	acgtatggac	accagattca	6180
agattcgtgg	caatcgtatc	gaatcagctg	agattgaagc	ggcccttctg	cgcgactcct	6240
ccgtccgaga	tgtctgtctc	gtccttcagc	agaatgagga	tcaagcgctc	gagatcttgg	6300
ggtttggttg	tgtctgatcat	gatcattctg	agaatgacaa	gggacaactc	gccaatcaag	6360
tccaaggatg	gcaagaccat	ttcgagagtg	gcatgtattc	cgacattggc	gaaattgacc	6420
cgtcgacgat	tggtagcgac	ttcaagggtt	ggacatcaat	gtatgatgga	agtcaaatcg	6480
acttcgatga	gatgcacgag	tggcttggtg	agactaccgc	gacactccat	gacaatcgct	6540
ctctaggcaa	tgtccttgaa	attggaacag	gtagcggcat	gatcctcttc	aaccttgaca	6600
gcaggccttga	gagttacgtt	ggctctgaac	catccagatc	agcagctgca	tttgtcaaca	6660
aagctaccga	gtctatacca	tcgcttgctg	gaaaagccaa	ggttcagggt	ggaacagcta	6720
cagatattgg	tcaagtcgat	gacttacacc	ctgacctcgt	ggttctcaac	tcagtcattc	6780
agtattttccc	gtcttcggag	taccttgca	aaatcgcaga	caccttgatt	catctgccta	6840
acgtgcagcg	gattttcttt	ggcgatgtcc	gatcgcaggc	caccaacgag	cacttctctg	6900
ctgccagggc	tatccacaca	ctggggaaga	atgcaacgaa	ggacgatgtt	cgacagaaaa	6960
tggcagaatt	ggaggacatg	gaggaggagt	tgcttggtga	acctgctttc	ttcacctcgt	7020
tgaagacag	gtttccagggt	ctgggtggaac	atgttgagat	cctgccaaaag	aacatggaag	7080
ctgtgaatga	gctcagtgcg	tatcgatatg	ccgctgttgt	gcacgttcgg	ggttcacttg	7140
gagatgagct	tgtgcttccg	gttgagaaaag	atgactggat	cgactttcaa	gcgaatcaat	7200
tgaaccagaa	gtcactgggt	gaccttctca	agtcttcaga	tgctgctatc	atggcagtca	7260
gcaaaattcc	tttcgaaatc	acggcctttg	aaagacagggt	cgctcgcttc	ctcaatagca	7320
acatcgatga	gtggcagcta	tcaaccattc	ggtccagcgc	cgaggggcag	tcatactat	7380
ccgttcccga	catcttctgc	attgctgggg	aagccgggtt	ccgtgctcag	gtcagttctg	7440
cacgacagtg	gtctcagaat	gggtcattgg	acgctgtttt	ccatcattgt	tgtctccaag	7500
ggcgactact	gggtcaactt	ctcacggacc	atcaccttcg	agggctctgat	ctcctcacca	7560
atcgaccctt	tcagcgactg	caaaaaccgtc	gtatcgccat	cgaagtcgcg	gagaggcttc	7620
ggtccttact	tccatcgtag	atgatcccat	cgaacatcgt	tgttctggac	aagatgcctc	7680
tcaacgccaa	tggtaaagtt	gaccggaagg	aactctctcg	cagggcaaaag	gttgtaccga	7740
agcagcagac	agcagcgccg	ttaccgacat	ttcccatcag	tgaggtcgaa	gtcatttctt	7800
gcgaagaagc	cactgagggtg	tttggcacga	aggttgacat	taccgatcac	ttcttcaatc	7860
tcggttgaca	ctctctcttg	gccacgaagc	tcatttctcg	tatcgacca	cgactcaagg	7920
tccgtatcac	tgtcaaggat	gtctttgacc	atcctgtatt	tgcggatcta	gcactgttca	7980
tccgtcaagg	gctgggtttg	caacaaccgg	ttcttgatgg	tcagggacaa	gcagagatctg	8040
cccacatggc	accccgtagc	gagacatgaag	ctatactctg	tgatgagttt	gcaaagggttc	8100
tggggttcca	agtcgggatt	acagacaatt	tctttgatct	tgggtggtcat	tcaactcatgg	8160
ctactaaact	cgctgtgcgc	atcggacatc	gacttgacac	gactgtttcg	gtgaaggatg	8220
ttttcgatca	tctgtactc	ttccaacttg	caattgcatt	ggataacttg	gttcaatcca	8280
agaccaatga	gatagttgga	ggtagagaaa	tggctgaata	ctcacctttc	caactcctct	8340
ttacagaaga	cccagaggag	tttatggcga	gcgagatcaa	gccacaactt	gagttacagg	8400
aaatcattca	agacatatat	ccgtctaccc	agatgcagaa	ggctttctct	ttcgatcaca	8460
caactgcgcg	cccagacact	ttcgtgccgt	tctacatcga	cttccccagc	acttccgagc	8520
ctgagtctgc	agggtcaatc	aaggcttgcg	agtctctggg	aaatcatctt	gacatcttca	8580
gaacagtctt	tgcagaggca	tctggagaac	tataccaagt	ggctcttgct	tgtcttgatc	

atagatttgc	gaaagagcca	gttcgtctgg	gacatccgtt	gattcgtttt	acaatcatca	8760
aacaaaccaa	gtcgtatgct	gtgataatga	gaatatcgca	tgccctgtat	gatggctctga	8820
gtctagagca	tgtcgtgctg	aaacttcaca	tgctctacaa	cgggagatca	cttttgccac	8880
cacaccaatt	ctcgcggtac	atgcagtata	ctgctgacgg	tcgcgaaagt	ggacatggat	8940
tttggcgcg	tgtgattcaa	aatacgcccc	tgacaatatt	gagtgatgac	acggttggtg	9000
atggaaatga	tgcaacctgc	aaggcgttgc	acctatcaaa	gattgtcaat	attccttcac	9060
aggtaactcg	aggcagcagt	aacatcatta	ctcaagctac	tgtgtttaac	gcagcctgcg	9120
cgttagtctt	gtcacgggaa	tctgaactga	aagacgttgt	ctttggacgc	atcgtctctg	9180
gtcgtcaagg	cttgctctgt	gaataccagg	acattgtcgg	gccttgtacc	aacgcagttc	9240
ctgttcgcgc	tcatatagag	tcgtcagatt	acaaccaatt	gctgcacgac	atccaagacc	9300
agtaccttct	cagcttgcca	cacgaaacaa	ttggcttctc	agatctcaag	cgcaactgta	9360
cagattggcc	agaagcaatc	accaacttct	catgctgcat	cacataccac	aatttcgagt	9420
accatcccg	gagtcagttc	gaacagcaga	gagttgagat	gggtgtattg	acaaagtttg	9480
tcaacattga	gatggatgag	ccactatatg	at ttggcgat	tgcgggtgaa	gttgaaccag	9540
acggagcagg	actgaaggtt	actgttatcg	cgaagacgca	gttatttggt	aggaagagag	9600
tagaacatct	gttgaggaa	gtttccaaaa	cgtttgaggg	tctcaactct	tctttgtaac	9660
gcacgggttg	gtctcaatcg	tcgcgacaga	acaaccgatg	taggtttgta	attcttaatg	9720
acgtctttga	ctttttgggt	tttaccattc	ggagcaaata	gtaagcagaa	cactggcaaa	9780
tgtcagatat	tacacttcag	aactattatc	ttgactatta	tctcacgttg	tcagctttca	9840
catgcttgct	acgttcgatc	gagtcaaaaa	ttgagatcta	cagggtaacg	caggaaatcca	9900
gaacaattga	caaggtatca	tcgatcgaa	actatgattg	gttcgcgtct	ctgcaggagc	9960
catttgctca	ataatagaag	tatagataag	atatgcgagg	aatgcgacaa	ggattggaac	10020
tatccgagtc	agcttgatct	agtcacctaa	cagtaaatag	ctcgcgcttc	ttcggattcg	10080
ctttggtgta	tgaattatca	tagtttggtg	tgcgaagaag	aacgatgatg	acagcttgta	10140
ttttggatat	atataagttc	ataaagggtat	gactcttgat	atgatcaaat	tagaaacaat	10200
accttgacaa	tattgtgttc	caacattaca	caacacttga	acgggacact	cyttcaacat	10260
caacacaatg	gatctgtcca	acaaagctgc	ctaccttgct	agtcaccaat	ggccccaccat	10320
cgaagtcaga	tctgcacctg	ttccaacacc	tggttcagga	gagttgctta	tcaagacaca	10380
tgctgtcgcc	atcaatccag	tcagcggagt	gaagcagctc	atgggtaaca	tgaagtgtga	10440
atggctcaag	tatcctctca	tccctggcta	cgatgtcgct	ggcgaggtca	tcaagacggg	10500
acctggtggt	agtcgattta	aagaaggcga	tagagttggt	gttgctacag	caggcatgga	10560
caagcgagga	agaagtcccg	acgaaggcgc	at ttcaagaa	gtttgcatca	tgcgagagca	10620
tttggctgct	cgaattccag	agcgtgttac	gtccaccgat	gccagcgttt	tgcctctgac	10680
tttcgtcacg	gctgcatgtg	cettgtttcca	aaaggatcaa	ctggcactac	aactacctca	10740
aaccaagtca	aagcgcagtg	caacaagtca	gacagtcttg	gtttggggag	cgagtacaag	10800
tgttgggaga	aatgctgtac	agcttgctgt	cgcgccgggc	tatgatgttg	tcgcgacagc	10860
atcacctaag	aactgggata	tcgtacgcgg	tctcggcgct	tgtgcagttt	ttgactatca	10920
cagctcatcg	gccataaacg	atgtgggtatc	tgctttcaag	gacaagaaat	gcgcaggtgc	10980
tgtagctatt	ggtcaaaggt	cactggcgaa	atgcgtcgac	attgtcaaaa	gcgtttccggg	11040
agccaccaag	aatgtttgcgc	aagttaccct	ctcaatgcct	gagtcacagc	caacaaccaa	11100
gatatccatg	atttcggttg	tcgcaaaagt	ttcttggtg	cggggaactg	atcgactcaa	11160
ggttgcgagc	agtggagttc	aaagcaagtt	tgtttttggt	acagacataa	tt	11212

```
<210> 2
<211> 3129
<212> PRT
<213> Fusarium
```

<400> 2															
Met	Glu	Tyr	Leu	Thr	Ala	Val	Asp	Gly	Arg	Gln	Asp	Leu	Pro	Pro	Thr
1				5					10					15	
Pro	Ala	Ser	Phe	Cys	Ser	His	Gly	Asp	Ser	Pro	Leu	Asn	Ser	Ser	Tyr
			20					25					30		
Glu	Gln	Leu	Phe	His	Leu	Tyr	Gly	Leu	Asp	Ser	Ser	Arg	Ile	Glu	Ala
		35					40					45			
Ile	Lys	Pro	Cys	Thr	Pro	Phe	Gln	Leu	Asp	Met	Ile	Asp	Cys	Asn	Ala
	50					55					60				

Leu 65	Asp	Lys	Gln	Ser	Ala 70	Ile	Gly	His	Ala	Val 75	Tyr	Asp	Val	Pro	Thr 80
Asp	Ile	Asp	Ile	Ser 85	Arg	Phe	Ala	Leu	Ala 90	Trp	Lys	Glu	Ile	Val 95	Asn
Gln	Thr	Pro	Ala 100	Leu	Arg	Ala	Phe	Ala 105	Phe	Thr	Ser	Asp	Ser 110	Gly	Lys
Thr	Ser	Gln	Val	Ile	Leu	Lys	Asp 120	Ser	Phe	Val	Phe	Ser 125	Trp	Met	Cys
Trp	Ser 130	Ser	Ser	Ser	Ser	Pro	Asp 135	Glu	Val	Val	Arg	Asp 140	Glu	Ala	Ala
Ala 145	Ala	Ala	Ser	Gly 150	Pro	Arg	Cys	Asn	Arg	Phe 155	Val	Leu	Leu	Glu	Asp 160
Met	Gln	Thr	Lys 165	Lys	Cys	Gln	Leu	Val	Trp 170	Thr	Phe	Ser	His 175	Ala	Leu
Val	Asp	Val	Thr 180	Phe	Gln	Gln	Arg	Val 185	Leu	Ser	Arg	Val	Phe 190	Ala	Ala
Tyr	Lys	His 195	Glu	Lys	Asp	Thr	His 200	Arg	Pro	Glu	Thr	Pro 205	Glu	Ser	Ser
Asp	Ala 210	Thr	Asp	Thr	Asp	Ser	Gln 215	Ser	Val	Ser	Val	Ser 220	Val	Met	Ser
Cys 225	Glu	Asp	Asn	Ala 230	Val	Ser	Ala	Thr	His 235	Phe	Trp	Gln	Thr	His	Leu 240
Asn	Asp	Leu	Asn 245	Ala	Ser	Val	Phe	Pro	His 250	Leu	Ser	Asp	His 255	Leu	Met
Val	Pro	Asn 260	Pro	Thr	Thr	Thr	Ala 265	Glu	His	Arg	Ile	Thr	Phe 270	Pro	Leu
Ser	Gln 275	Lys	Ala	Leu	Ser	Asn	Ser 280	Ala	Ile	Cys	Arg	Thr 285	Ala	Leu	Ser
Ile	Leu 290	Leu	Ser	Arg	Tyr	Thr 295	His	Ser	Asp	Glu	Ala 300	Leu	Phe	Gly	Ala
Val 305	Thr	Glu	Gln	Ser 310	Leu	Pro	Phe	Asp	Lys	His 315	Tyr	Leu	Ala	Asp	Gly 320
Thr	Tyr	Gln	Thr 325	Val	Ala	Pro	Leu	Arg	Val 330	His	Cys	Gln	Ser	Asn 335	Leu
Arg	Ala	Ser	Asp 340	Val	Met	Asp	Ala 345	Ile	Ser	Ser	Tyr	Asp	Asp 350	Arg	Leu
Gly	His 355	Leu	Ala	Pro	Phe	Gly	Leu 360	Arg	Asp	Ile	Arg	Asn 365	Thr	Gly	Asp
Asn	Gly 370	Ser	Ala	Ala	Cys	Asp 375	Phe	Gln	Thr	Val	Leu 380	Leu	Val	Thr	Asp
Gly 385	Ser	His	Val	Asn 390	Asn	Gly	Ile	Asn	Gly	Phe 395	Leu	Gln	Gln	Ile	Thr 400
Glu	Ser	Ser	His 405	Phe	Met	Pro	Cys	Asn	Asn 410	Arg	Ala	Leu	Leu	Leu	His 415
Cys	Gln	Met	Glu 420	Ser	Ser	Gly	Ala	Leu 425	Leu	Val	Ala	Tyr	Tyr 430	Asp	His
Asn	Val 435	Ile	Asp	Ser	Leu	Gln	Thr 440	Thr	Arg	Leu	Leu 445	Gln	Phe	Gly	
His	Leu 450	Ile	Lys	Cys	Leu	Gln	Ser 455	Pro	Leu	Asp	Leu 460	Ser	Ser	Met	Ala
Glu 465	Val	Asn	Leu	Met 470	Thr	Glu	Tyr	Asp	Arg	Ala 475	Glu	Ile	Glu	Ser	Trp 480
Asn	Ser	Gln	Pro 485	Leu	Glu	Val	Gln	Asp 490	Thr	Leu	Ile	His	His 495	Glu	Met
Leu	Lys	Ala	Val 500	Ser	His	Ser	Pro 505	Thr	Lys	Thr	Ala	Ile 510	Gln	Ala	Trp
Asp	Gly 515	Asp	Trp	Thr	Tyr	Ser	Glu 520	Leu	Asp	Asn	Val 525	Ser	Ser	Arg	Leu

Ala	Val	His	Ile	Lys	Ser	Leu	Gly	Leu	Arg	Ala	Gln	Gln	Ala	Ile	Ile
530						535					540				
Pro	Val	Tyr	Phe	Glu	Lys	Ser	Lys	Trp	Val	Ile	Ala	Ser	Met	Leu	Ala
545					550					555					560
Val	Leu	Lys	Ser	Gly	Asn	Ala	Phe	Thr	Leu	Ile	Asp	Pro	Asn	Asp	Pro
				565					570					575	
Pro	Ala	Arg	Thr	Ala	Gln	Val	Val	Thr	Gln	Thr	Arg	Ala	Thr	Val	Ala
			580					585					590		
Leu	Thr	Ser	Lys	Leu	His	Arg	Glu	Thr	Val	Gln	Lys	Leu	Val	Gly	Arg
		595					600					605			
Cys	Val	Val	Val	Asp	Asp	Glu	Leu	Leu	Gln	Ser	Val	Ser	Ala	Ser	Asp
	610					615					620				
Asp	Phe	Ser	Ser	Leu	Thr	Lys	Ser	Gln	Asp	Leu	Ala	Tyr	Val	Ile	Phe
625					630					635					640
Thr	Ser	Gly	Ser	Thr	Gly	Asp	Pro	Lys	Gly	Ile	Met	Ile	Glu	His	Arg
				645					650					655	
Ala	Phe	Ser	Ser	Cys	Ala	Leu	Lys	Phe	Gly	Ala	Ser	Leu	Gly	Ile	Asn
			660					665					670		
Ser	Asp	Thr	Arg	Ala	Leu	Gln	Phe	Gly	Thr	His	Ala	Phe	Gly	Ala	Cys
		675					680					685			
Leu	Leu	Glu	Ile	Met	Thr	Thr	Leu	Ile	Asn	Gly	Gly	Cys	Val	Cys	Ile
	690					695					700				
Pro	Ser	Asp	Asp	Asp	Arg	Met	Asn	Ser	Ile	Pro	Ser	Phe	Ile	Asn	Arg
705					710					715					720
Tyr	Asn	Val	Asn	Trp	Met	Met	Ala	Thr	Pro	Ser	Tyr	Met	Gly	Thr	Phe
				725					730					735	
Ser	Pro	Glu	Asp	Val	Pro	Gly	Leu	Ala	Thr	Leu	Val	Leu	Val	Gly	Glu
			740					745					750		
Gln	Met	Ser	Ser	Ser	Val	Asn	Ala	Ile	Trp	Ala	Pro	Lys	Leu	Gln	Leu
		755					760					765			
Leu	Asn	Gly	Tyr	Gly	Gln	Ser	Glu	Ser	Ser	Ser	Ile	Cys	Phe	Ala	Ser
	770					775					780				
Asn	Met	Ser	Thr	Glu	Pro	Asn	Asn	Met	Gly	Arg	Ala	Val	Gly	Ala	His
785					790					795					800
Ser	Trp	Val	Ile	Asp	Pro	Asn	Asp	Ile	Asn	Arg	Leu	Val	Pro	Ile	Gly
				805					810					815	
Ala	Val	Gly	Glu	Leu	Val	Ile	Glu	Ser	Pro	Gly	Ile	Ala	Arg	Asp	Tyr
			820					825					830		
Ile	Val	Pro	Pro	Pro	Pro	Glu	Lys	Ser	Pro	Phe	Phe	Thr	Asp	Ile	Pro
		835					840					845			
Ser	Trp	Tyr	Pro	Ala	Asn	Thr	Phe	Pro	Asp	Gly	Ala	Lys	Leu	Tyr	Arg
	850					855				860					
Thr	Gly	Asp	Leu	Ala	Arg	Tyr	Ala	Ser	Asp	Gly	Ser	Ile	Val	Cys	Leu
865					870					875					880
Gly	Arg														



His	Ser	Gln	Lys	Asp	Leu	Gly	Arg	Phe	Lys	Phe	Gln	Gly	Leu	Glu	Ser
			1460					1465					1470		
Val	Pro	Val	Pro	Ser	Lys	Ala	Tyr	Thr	Arg	Phe	Asp	Met	Glu	Phe	His
		1475					1480					1485			
Leu	Phe	Gln	Glu	Thr	Asp	Ser	Leu	Lys	Gly	Ser	Val	Asn	Phe	Ala	Asp
	1490					1495					1500				
Glu	Leu	Phe	Lys	Met	Glu	Thr	Val	Glu	Asn	Val	Val	Arg	Val	Phe	Phe
1505				1510					1515						1520
Glu	Ile	Leu	Arg	Asn	Gly	Leu	Gln	Ser	Ser	Arg	Thr	Pro	Val	Ser	Ile
			1525					1530						1535	
Leu	Pro	Leu	Thr	Asp	Gly	Ile	Val	Thr	Leu	Glu	Lys	Leu	Asp	Val	Leu
			1540					1545					1550		
Asn	Val	Lys	His	Val	Asp	Tyr	Pro	Arg	Glu	Ser	Ser	Leu	Ala	Asp	Val
		1555					1560					1565			
Phe	Gln	Thr	Gln	Val	Ser	Ala	Tyr	Pro	Asp	Ser	Leu	Ala	Val	Val	Asp
	1570					1575					1580				
Ser	Ser	Cys	Arg	Leu	Thr	Tyr	Thr	Glu	Leu	Asp	Arg	Gln	Ser	Asp	Ile
1585				1590						1595					1600
Leu	Ala	Gly	Trp	Leu	Arg	Arg	Arg	Ser	Met	Pro	Ala	Glu	Thr	Leu	Val
			1605					1610						1615	
Ala	Val	Phe	Ala	Pro	Arg	Ser	Cys	Glu	Thr	Ile	Val	Ala	Phe	Phe	Gly
			1620					1625					1630		
Val	Leu	Lys	Ala	Asn	Leu	Ala	Tyr	Leu	Pro	Leu	Asp	Val	Arg	Ser	Pro
		1635					1640					1645			
Ser	Ala	Arg	Val	Gln	Asp	Ile	Leu	Ser	Gly	Leu	Ser	Gly	Pro	Thr	Ile
	1650					1655					1660				
Val	Leu	Ile	Gly	His	Asp	Thr	Ala	Pro	Pro	Asp	Ile	Glu	Val	Thr	Asn
1665				1670						1675					1680
Val	Glu	Phe	Val	Arg	Ile	Arg	Asp	Ala	Leu	Asn	Asp	Ser	Asn	Ala	Asp
			1685					1690						1695	
Gly	Phe	Glu	Val	Ile	Glu	His	Asp	Ser	Thr	Lys	Pro	Ser	Ala	Thr	Ser
		1700						1705					1710		
Leu	Ala	Tyr	Val	Leu	Tyr	Thr	Ser	Gly	Ser	Thr	Gly	Arg	Pro	Lys	Gly
	1715						1720					1725			
Val	Met	Ile	Glu	His	Arg	Val	Ile	Ile	Arg	Thr	Val	Thr	Ser	Gly	Cys
	1730					1735					1740				
Ile	Pro	Asn	Tyr	Pro	Ser	Glu	Thr	Arg	Met	Ala	His	Met	Ala	Thr	Ile
1745				1750						1755					1760
Ala	Phe	Asp	Gly	Ala	Ser	Tyr	Glu	Ile	Tyr	Ser	Ala	Leu	Leu	Phe	Gly
			1765					1770						1775	
Arg	Thr	Leu	Val	Cys	Val	Asp	Tyr	Met	Thr	Thr	Leu	Asp	Ala	Arg	Ala
		1780						1785					1790		
Leu	Lys	Asp	Val	Phe	Phe	Arg	Glu	His	Val	Asn	Ala	Ala	Ser	His	Val
	1795														



Gly	Tyr	Ser	Asp	Lys	Ala	Leu	Asp	Glu	Asn	Arg	Phe	Val	His	Ile	Thr	
				1925					1930					1935		
Val	Asn	Asp	Gln	Thr	Val	Lys	Ala	Tyr	Arg	Thr	Gly	Asp	Arg	Val	Arg	
			1940					1945					1950			
Tyr	Arg	Ile	Gly	Asp	Gly	Leu	Ile	Glu	Phe	Phe	Gly	Arg	Met	Asp	Thr	
		1955				1960						1965				
Gln	Phe	Lys	Ile	Arg	Gly	Asn	Arg	Ile	Glu	Ser	Ala	Glu	Ile	Glu	Ala	
	1970					1975					1980					
Ala	Leu	Leu	Arg	Asp	Ser	Ser	Val	Arg	Asp	Ala	Ala	Val	Val	Leu	Gln	
1985				1990					1995						2000	
Gln	Asn	Glu	Asp	Gln	Ala	Pro	Glu	Ile	Leu	Gly	Phe	Val	Val	Ala	Asp	
			2005						2010						2015	
His	Asp	His	Ser	Glu	Asn	Asp	Lys	Gly	Gln	Ser	Ala	Asn	Gln	Val	Glu	
			2020					2025					2030			
Gly	Trp	Gln	Asp	His	Phe	Glu	Ser	Gly	Met	Tyr	Ser	Asp	Ile	Gly	Glu	
		2035					2040					2045				
Ile	Asp	Pro	Ser	Thr	Ile	Gly	Ser	Asp	Phe	Lys	Gly	Trp	Thr	Ser	Met	
	2050					2055					2060					
Tyr	Asp	Gly	Ser	Gln	Ile	Asp	Phe	Asp	Glu	Met	His	Glu	Trp	Leu	Gly	
2065				2070					2075						2080	
Glu	Thr	Thr	Arg	Thr	Leu	His	Asp	Asn	Arg	Ser	Leu	Gly	Asn	Val	Leu	
			2085						2090					2095		
Glu	Ile	Gly	Thr	Gly	Ser	Gly	Met	Ile	Leu	Phe	Asn	Leu	Asp	Ser	Arg	
			2100					2105					2110			
Leu	Glu	Ser	Tyr	Val	Gly	Leu	Glu	Pro	Ser	Arg	Ser	Ala	Ala	Ala	Phe	
		2115					2120					2125				
Val	Asn	Lys	Ala	Thr	Glu	Ser	Ile	Pro	Ser	Leu	Ala	Gly	Lys	Ala	Lys	
	2130					2135					2140					
Val	Gln	Val	Gly	Thr	Ala	Thr	Asp	Ile	Gly	Gln	Val	Asp	Asp	Leu	His	
2145				2150					2155					2160		
Pro	Asp	Leu	Val	Val	Leu	Asn	Ser	Val	Ile	Gln	Tyr	Phe	Pro	Ser	Ser	
			2165					2170						2175		
Glu	Tyr	Leu	Ala	Glu	Ile	Ala	Asp	Thr	Leu	Ile	His	Leu	Pro	Asn	Val	
		2180					2185						2190			
Gln	Arg	Ile	Phe	Phe	Gly	Asp	Val	Arg	Ser	Gln	Ala	Thr	Asn	Glu	His	
	2195						2200					2205				
Phe	Leu	Ala	Ala	Arg	Ala	Ile	His	Thr	Leu	Gly	Lys	Asn	Ala	Thr	Lys	
	2210					2215					2220					
Asp	Asp	Val	Arg	Gln	Lys	Met	Ala	Glu	Leu	Glu	Asp	Met	Glu	Glu	Glu	
2225				2230						2235					2240	
Leu	Leu	Val	Glu	Pro	Ala	Phe	Phe	Thr	Ser	Leu	Lys	Asp	Arg	Phe	Pro	
			2245					2250						2255		
Gly	Leu	Val	Glu	His	Val	Glu	Ile	Leu	Pro	Lys	Asn	Met	Glu	Ala	Val	
		2260					2265						2270			
Asn	Glu	Leu	Ser	Ala	Tyr	Arg	Tyr	Ala	Ala	Val	Val	His	Val	Arg	Gly	
	2275					2280						2285				
Ser	Leu	Gly	Asp	Glu	Leu	Val	Leu	Pro	Val	Glu	Lys	Asp	Asp	Trp	Ile	
	2290					2295						2300				
Asp	Phe	Gln	Ala	Asn	Gln	Leu	Asn	Gln	Lys	Ser	Leu	Gly	Asp	Leu	Leu	
2305				2310					2315						2320	
Lys	Ser	Ser	Asp	Ala	Ala	Ile	Met	Ala	Val	Ser	Lys	Ile	Pro	Phe	Glu	
			2325						2330					2335		
Ile	Thr	Ala	Phe	Glu	Arg	Gln	Val	Val	Ala	Ser	Leu	Asn	Ser	Asn	Ile	
		2340					2345					2350				
Asp	Glu	Trp	Gln	Leu	Ser	Thr	Ile	Arg	Ser	Ser	Ala	Glu	Gly	Asp	Ser	
	2355					2360						2365				
Ser	Leu	Ser	Val	Pro	Asp	Ile	Phe	Arg	Ile	Ala	Gly	Glu	Ala	Gly	Phe	
	2370					2375						2380				

Arg	Val	Glu	Val	Ser	Ser	Ala	Arg	Gln	Trp	Ser	Gln	Asn	Gly	Ala	Leu
2385					2390					2395					2400
Asp	Ala	Val	Phe	His	His	Cys	Cys	Ser	Gln	Gly	Arg	Thr	Leu	Val	Asn
				2405					2410					2415	
Phe	Pro	Thr	Asp	His	His	Leu	Arg	Gly	Ser	Asp	Leu	Leu	Thr	Asn	Arg
			2420					2425					2430		
Pro	Leu	Gln	Arg	Leu	Gln	Asn	Arg	Arg	Ile	Ala	Ile	Glu	Val	Arg	Glu
		2435				2440						2445			
Arg	Leu	Arg	Ser	Leu	Leu	Pro	Ser	Tyr	Met	Ile	Pro	Ser	Asn	Ile	Val
	2450				2455					2460					
Val	Leu	Asp	Lys	Met	Pro	Leu	Asn	Ala	Asn	Gly	Lys	Val	Asp	Arg	Lys
2465				2470						2475					2480
Glu	Leu	Ser	Arg	Arg	Ala	Lys	Val	Val	Pro	Lys	Gln	Gln	Thr	Ala	Ala
			2485					2490					2495		
Pro	Leu	Pro	Thr	Phe	Pro	Ile	Ser	Glu	Val	Glu	Val	Ile	Leu	Cys	Glu
			2500					2505					2510		
Glu	Ala	Thr	Glu	Val	Phe	Gly	Met	Lys	Val	Asp	Ile	Thr	Asp	His	Phe
		2515				2520						2525			
Phe	Asn	Leu	Gly	Gly	His	Ser	Leu	Leu	Ala	Thr	Lys	Leu	Ile	Ser	Arg
	2530				2535					2540					
Ile	Asp	Gln	Arg	Leu	Lys	Val	Arg	Ile	Thr	Val	Lys	Asp	Val	Phe	Asp
2545				2550						2555					2560
His	Pro	Val	Phe	Ala	Asp	Leu	Ala	Ser	Val	Ile	Arg	Gln	Gly	Leu	Gly
			2565					2570					2575		
Leu	Gln	Gln	Pro	Val	Ser	Asp	Gly	Gln	Gly	Gln	Asp	Arg	Ser	Ala	His
			2580					2585					2590		
Met	Ala	Pro	Arg	Thr	Glu	Thr	Glu	Ala	Ile	Leu	Cys	Asp	Glu	Phe	Ala
	2595				2600							2605			
Lys	Val	Leu	Gly	Phe	Gln	Val	Gly	Ile	Thr	Asp	Asn	Phe	Phe	Asp	Leu
	2610				2615					2620					
Gly	Gly	His	Ser	Leu	Met	Ala	Thr	Lys	Leu	Ala	Val	Arg	Ile	Gly	His
2625				2630						2635					2640
Arg	Leu	Asp	Thr	Thr	Val	Ser	Val	Lys	Asp	Val	Phe	Asp	His	Pro	Val
			2645					2650					2655		
Leu	Phe	Gln	Leu	Ala	Ile	Ala	Leu	Asp	Asn	Leu	Val	Gln	Ser	Lys	Thr
		2660						2665					2670		
Asn	Glu	Ile	Val	Gly	Gly	Arg	Glu	Met	Ala	Glu	Tyr	Ser	Pro	Phe	Gln
	2675					2680						2685			
Leu	Leu	Phe	Thr	Glu	Asp	Pro	Glu	Glu	Phe	Met	Ala	Ser	Glu	Ile	Lys
	2690				2695					2700					
Pro	Gln	Leu	Glu	Leu	Gln	Glu	Ile	Ile	Gln	Asp	Ile	Tyr	Pro	Ser	Thr
2705				2710						2715					2720
Gln	Met	Gln	Lys	Ala	Phe	Leu	Phe	Asp	His	Thr	Thr	Ala	Arg	Pro	Arg
			2725		</										

